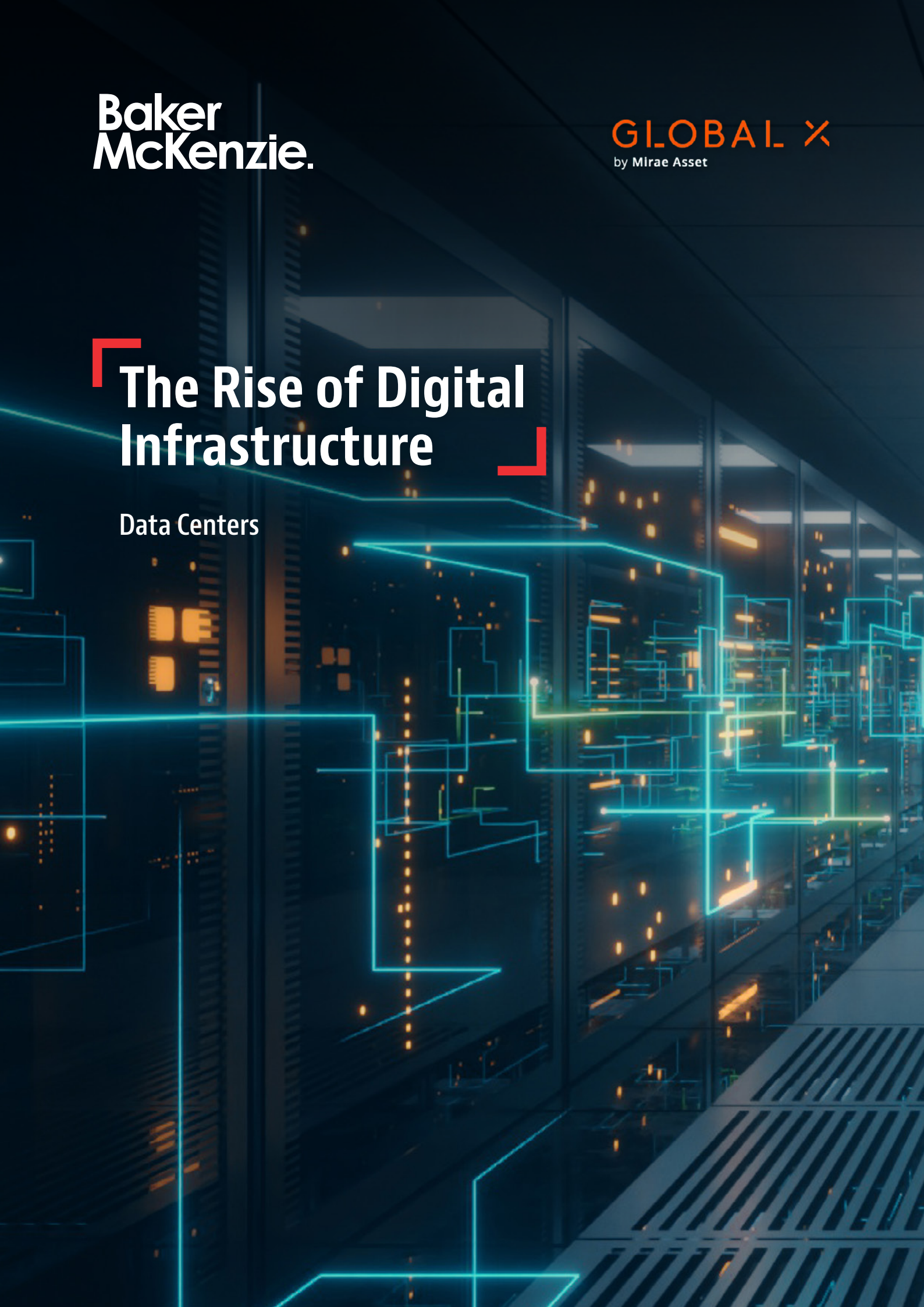


The Rise of Digital Infrastructure

Data Centers





Introduction

As the world transitions to an increasingly digitalized economy, our infrastructure needs are changing.

For much of the 20th century, investment efforts focused on building transportation infrastructure to enhance economic growth. In the 1930s and 1960s, in particular, the US government spent upwards of 4% of the country's GDP to build bridges, seaports, airports and an interstate highway system, all to ease the challenges of moving people, goods and services across the country.¹ Concurrent with this buildout, numerous trends emerged that took advantage of easier movement, the rise of commutes from the suburbs, transcontinental air travel and globally integrated supply chains.

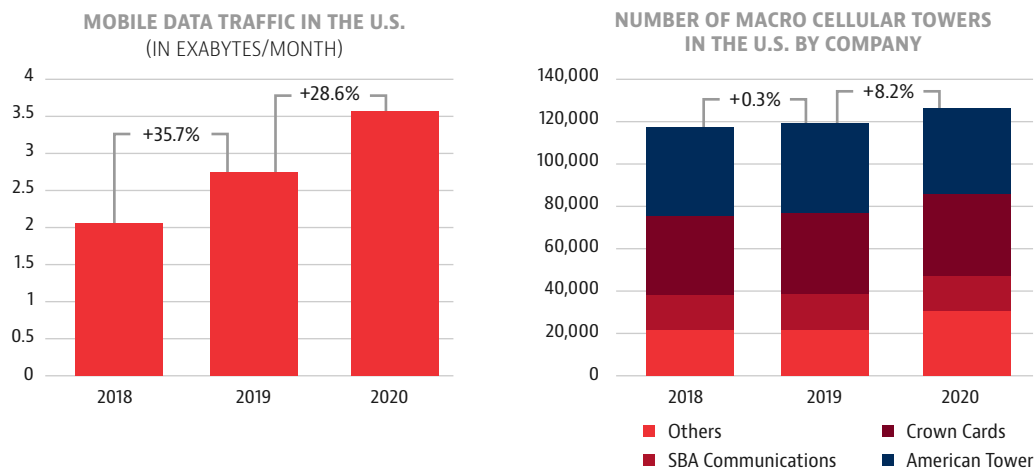
Beyond the US, recent global investments in infrastructure have similarly prioritized transportation. Estimates suggest that approximately USD 1 trillion per year was spent on roads, rail, airports and ports from 2007 to 2015, driven by a confluence of trends of a rising middle class in emerging markets, accelerated urbanization and the increased offshoring of jobs.²

The 2020s are giving rise to a different kind of infrastructure revolution. In this era of rapid digitalization, coupled with an increased emphasis on sustainability, the physical structures that facilitate the efficient transmission, storage and processing of data are playing critical roles in accelerating global economic growth; cellular towers that transmit and receive radio signals to wireless devices, terrestrial and subsea fibre, and data centers that host servers storing and processing data. Together, they form the backbone of the digital and wireless technologies that we use daily.

Today, there are approximately 128,000 macro cell towers in the US, but each tower only has so much range and capacity. A typical cellphone has only enough range to reach a tower up to 5-7 miles away, and a single LTE cell can only manage around 200 connections per 5 MHz of spectrum before speed begins to stall.^{3,4} With 3.2 billion active smartphone users globally — and counting — tower demand is expected to remain robust.⁵

However, construction and permitting hurdles often limit expansion, making existing towers increasingly valuable. For example, suppliers of macro cell towers in the US added approximately 8% tower capacity from 2019 to 2020.⁶ But that lags substantially behind the 29% growth of mobile data per smartphone in North America.⁷

Mobile Data Traffic Growth Continues to Outpace Macro Tower Growth



Source: Global X ETFs, Ericsson, Wireless Estimator 2020. Totals do not include distributed antenna systems (DAS) and small cells.



Another key piece of the digital infrastructure ecosystem is data centers, which can host thousands of servers facilitating all types of data storage and processing, from storing secure data to facilitating online shopping or analyzing data with advanced AI algorithms. Data centers are large warehouse-like buildings that charge tenants — often major technology firms — for physical space, power, cooling, security and other services. Yet data centers cannot just be located anywhere. Access to cheap electricity, proximity to major population centers, availability of high-speed networks and colocation with other key tenants are all important factors. The buildout of data centers remains robust to meet exponential growth in data. The seven major metro areas in the US have a combined 2700 megawatts (MW) of data center inventory with another 373 MW, or 14%, is currently under construction, according to CBRE.⁸

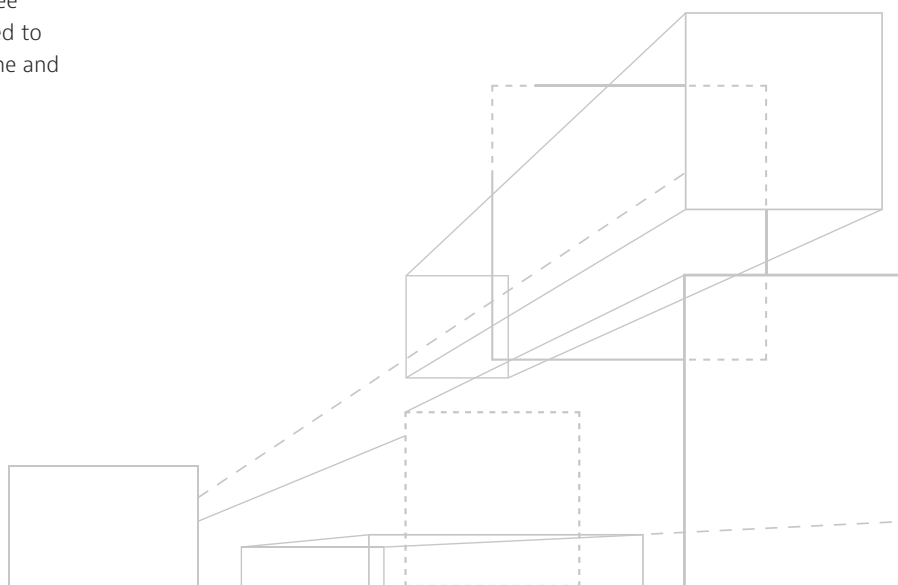
Sustainability is an important consideration for investors in data centers as well. Data centers use vast amounts of electricity, consuming approximately 1% of the world's total electricity use, or 205 TWh.⁹ The form of electricity generation powering these facilities to run servers and provide appropriate cooling is increasingly a major contributor to carbon emissions. If sourced from coal power generation, for example, the carbon emissions can be substantial. Big tech has made concerted efforts to limit the carbon footprint of data centers by demanding more energy efficient data centers and entering energy offset agreements (Corporate PPAs), with Facebook and Google looking to eliminate carbon emissions by 2030 and Amazon by 2040. To meet these ambitious climate goals, the growth of data centers globally must be met with offsetting investment in renewable energy production, storage and transmission, including solar and wind projects, utility scale batteries and smart grid systems.

The focus on digital infrastructure has accelerated amid the COVID-19 pandemic, which has upended many well-engrained habits. For many, the daily commute has been replaced by work-from-home, facilitated by remote access to data and software. Rather than traveling to see friends and family, many are leveraging teleconferencing to see loved ones. Visits to the doctor and school have moved to cloud-based technologies, too, ushering in telemedicine and distance learning as parts of our daily routine.

Even shopping and entertainment moved to the virtual world, with e-commerce and video game activity surging in 2020, in lieu of shopping at brick-and-mortar stores or attending live events.

Looking ahead, demand for digital infrastructure is expected to remain robust. With the full rollout of COVID-19 vaccines still some time away, there is still substantial uncertainty surrounding what the post-pandemic world looks like. Early indications suggest that recent shifts to digital technologies are likely to stick in the long run, perhaps permanently replacing some percentage of physical, in-person activities. The low costs, safety and convenience associated with digital technologies may be too appealing to give up.

Furthermore, many of the most disruptive technologies on the horizon will depend on digital infrastructure. 5G, the next advancement in mobile connectivity with faster speeds, lower latency and higher capacity, will require a massive buildout of hundreds of thousands of small cell sites in the US to compensate for its shorter range. Augmented and virtual reality, increasingly popular in gaming and entertainment, could require four to eight times more bandwidth than streaming HD movies.¹⁰¹¹ Just as extra lanes are added to a highway to accommodate population growth, so too will digital infrastructure need to be scaled to meet our rapidly growing dependence on data in all aspects of our lives.





Key legal issues for data center investors

Data center businesses have previously been considered as real estate investments but are becoming increasingly attractive to long-term private capital, such as private equity and managed infrastructure funds, pension and sovereign wealth funds, which are seeking to deploy capital in other alternate asset classes with infrastructure-like characteristics, revenue growth and long-term stable income.

Investors in data centers will need to consider a wide range of issues, some of which are unique to this asset class.

01 Foreign investment controls

Whether a proposed data center business acquisition involving a foreign investor triggers the jurisdiction of a foreign investment screening regime is an important consideration. Data centers are increasingly considered critical infrastructure in most jurisdictions, and new rules that touch on data sovereignty increasingly apply. Foreign acquisitions of data centers tend to be among the most sensitive acquisitions considered.

Controls under the screening regime may include:

- a. voluntary or mandatory notification to, approval from, or some other form of screening by, the screening authority
- b. imposition of ownership requirements or other conditions relating to matters such as governance and data access and storage

Screening authorities may consider the following in evaluating applications related to data center businesses:

- a. the significance of the business to the country as determined by factors such as:
 - i. the type of data held or accessed by the business
 - ii. whether the business has (directly or indirectly) government customers or other customers that are critical to the country (e.g., critical infrastructure providers) and, if so, the type of government and other critical data held or accessible by the business

- b. the physical and cyber security controls and protections in place to protect the data and associated compliance/audit regimes
- c. the accessibility protocols attaching to data, particularly from outside the country
- d. the nature of the applicant and in particular the potential for foreign government influence

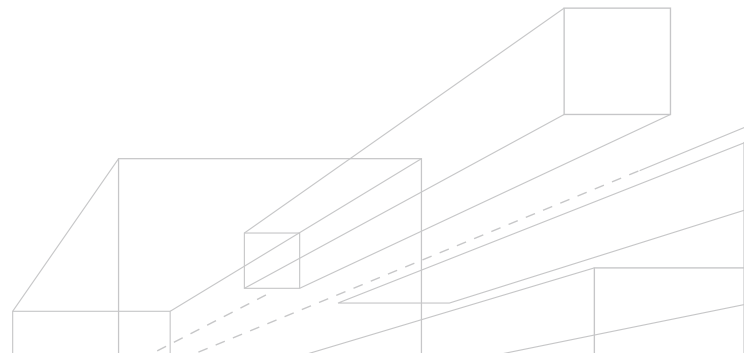
Foreign investment controls affect which assets are available for investment by private capital (especially sovereign wealth funds and other funds considered to be government-owned or controlled) and the structures used (e.g., whether direct investment or through a managed fund).

02 Issues arising from due diligence conducted in relation to a data center business

CUSTOMER CONTRACTS

The key to the value of a data center business is the integrity of the long-term revenue stream generated from customer contracts, assuming of course that the revenue remains profitable over the term. Long-term private financial investors in data centers have tended to target data centers that provide storage facilities to large “hyperscalers” such as Google, Facebook, Amazon, Microsoft, Oracle and other cloud providers who in turn store large amounts of data on behalf of their customers. These facilities are typically state of the art and purpose-built to meet the specific requirements of individual hyperscalers, which can differ according to the individual requirements.

The contracts tend to be long term with creditworthy counterparties of the type mentioned above. The contracts tend to have very specific requirements concerning those services that the data center provider remains responsible for — typically physical security (including emergency responses and fire controls) and technical efficiency.





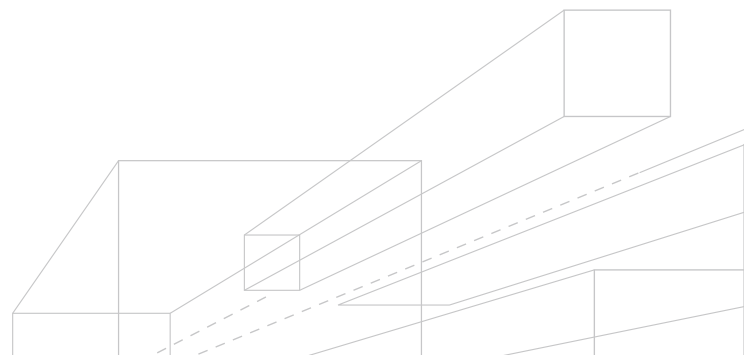
The best way to think of a data center operator in this context is that the data center operator is providing a purpose-built “box” with specialized infrastructure (cabling connection services, cooling, fire safety, back up generation, meet me rooms) but that the internal spaces are under the control of the hyperscaler tenant. Also, at least in the context of hyperscale data center operators, the operator never “touches” the data.

The aspects of technical efficiency for which data center operators typically assume responsibility include temperature control, provision of uninterruptible power and electricity efficiency, and stable connections to telecommunications infrastructure. In some cases, data center operators assume some responsibility for cybersecurity at certain levels, but most hyperscalers maintain their own cybersecurity controls and threat protection. These KPIs are embodied in service level agreements (SLAs), which form part of the overall customer contract with the hyperscaler. The hyperscale customer contract can be in the form of a master services agreement or increasingly a sublease/license of the relevant space.

The other broad category of data center operator is for the provision of enterprise/colocation services; typically the data storage needs of individual customers rather than providers of cloud services. This is a very large, significant segment of the market. Some contracts with individual corporations can be very large, but to date, private capital has tended to prefer investment in hyperscale operators given the certainty and credit quality of the long-term customer base. Longer term, we believe that there will be an increased investment focus on operators of data centers that provide colocation services to enterprise customers that are not storing data utilizing cloud services.

Key legal issues to consider during the review of hyperscale customer contracts include the following:

- a. Change of control or assignment restrictions:** Are there restrictions affecting the proposed transaction or affecting the joint venture, M&A and exit options down the track? Some hyperscale customer contracts restrict transfers to the customer’s competitor or operators from countries where regulators perceive to be risky
 - b. SLAs imposed on the operator in favor of the customer.** SLAs typically include:
 - i.** uninterrupted provision of power (e.g., 99.999% power availability) and PUE (power usage effectiveness)
 - ii.** connectivity (e.g., 100% connectivity availability)
 - iii.** monitoring of security
 - iv.** ‘environmental’ services (e.g., meeting temperature and humidity requirements)
 - v.** remote hands (i.e., provision of on-site services)
- Consider the consequences for breach by the operator (e.g., penalties such as rent credits and termination rights). Are these remedies to the customer sole and exclusive, or is the operator exposed to the customer’s other liabilities and losses e.g., consequential business losses? Does the operator have the benefit of a limitation of liability? Are there any indemnities in favor of the customer and, if so, which level of ownership in the operator is affected by the indemnity? Is the operator released from their SLA obligations as a result of a force majeure event?
- c. Contracted capacity obligations:** Consider the consequences for failing to meet the requirements to commission capacity by contracted target dates. See previous comments on breaches of SLAs.
 - d. Termination rights:** Are there any unreasonable rights where the customer may terminate for convenience or unilaterally reduce capacity without adequate compensation to the operator affecting the revenue stream?
 - e. Flexibility/portability rights:** Does the customer have any step-in-rights, rights of first offer, exclusivity rights, capacity reservation rights and/or other rights (including those relating to ensuring the customer has flexibility and portability) that could materially impact the revenue stream?
 - f. Security** (physical, e.g., loss of tangible property, and electronic, e.g., data privacy breaches): Security is an important issue for customers. The scope of an operator’s responsibility is a point for significant negotiation between operators and customers. Consider local jurisdictional requirements. For example, some jurisdictions impose specific regulatory requirements regarding security, e.g., prudential requirements for security of bank data.
 - g. Stickiness:** Generally how “sticky” is the customer? Is it practical/efficient for the customer to move once established in a particular center?





OTHER KEY CONTRACTS

Ensure the business has all necessary utility and other supply contracts, property rights (e.g., easements) and planning approvals, and authorizations and licenses to construct, own and operate the data centers and meet its obligations under customer contracts such as SLAs to provide uninterrupted power.

Depending on the jurisdiction, authorizations may be required for the construction, ownership and operation of electricity distribution networks, substations, electricity generation and storage assets, telecommunication assets, water infrastructure and data storage.

Ensure it has appropriate construction arrangements in place and that an acceptable 'gap risk' is borne by the operator.

Finally, firm uninterruptible electricity supply contracts with secure connections to the grid and access to telecommunication services for the carriage of data into the center are critical.

DUE DILIGENCE PROCESS/BLACK BOX

It is common for sellers to impose significant confidentiality obligations upon bidders with respect to the review of customer contracts during the due diligence process. Additional security restrictions may apply where there are customer contracts with government entities or concerning the storage of otherwise sensitive data (personal records). Review may only be available to a successful bidder in a limited manner. A seller may set up a "black box" due diligence process.

03 Data related issues

The aphorism "data is the new oil" is emblematic of the surge in data center investment, with many jurisdictions seeking data sovereignty. Being technologically independent and having control over data will be key to launching data-sharing spaces and relying on data-driven decisions to take societies to the next level. Ideas around data residency and data sovereignty, as well as the rise of edge computing, open a big opportunity for investors, as data centers will be disseminated worldwide. Data center investors will need to consider many regulatory requirements in all relevant jurisdictions with the aim of avoiding regulatory intervention and enforcement that potentially may result in fines and reputational damage, and which in turn may lead to an erosion of asset value and jeopardize returns to the investor. Main data related issues involve the following.

PRIVACY REQUIREMENTS

Many jurisdictions worldwide (including California, Singapore and Brazil) are following Europe's path in introducing strict privacy restrictions. It is key for data center investors to ensure that the data centers they wish to invest in have robust compliance frameworks in place to mitigate risks of non-compliance, which could lead to poor uptake by risk-averse customers, liability under customer contracts or very substantial fines.

TELECOMMUNICATION LAWS REQUIREMENTS

Digital infrastructure operators, their equipment and the services they provide will likely need to comply with telecom regulatory requirements and technical standards, increasingly overseen by competent authorities and the compliance of which could involve considerable cost and impact on operational practices.

CYBERSECURITY REQUIREMENTS

Data stored on cloud needs adequate cybersecurity measures to ensure that systems supporting critical infrastructures such as the ones related to energy, transport, banking, health and digital services, among others, are duly protected. Many countries across the globe have recently established laws to mitigate such risks and ensure businesses and critical sectors' continuity, and they usually affect data centers.

DATA LOCALIZATION REQUIREMENTS

Another key concern is whether personal data will be transferred to or accessible from an overseas jurisdiction and, if so, whether that is legally permissible and/or whether any steps need to be taken to ensure compliance.

ANTITRUST

As gatekeepers of data, data centers need to respect antitrust restrictions to avoid leveraging their factual position of dominance.

CUSTOMER CONTRACTS

From data center customers' perspective, it is crucial to ensure that their data is stored securely. Therefore, data center customers may request considerable detail about data center operators' security policies and protections and may push for specific protections to be included in their contract with the data center provider. Privacy, data protection, loss of data and cybersecurity liabilities are also increasingly becoming deal breakers, as it is not always easy



to balance the interests at stake. Making sure that customer contracts foresee liability caps would be advisable to avoid uncertainty.

04 Tax issues

The tax analysis in relation to data center investment can be complex and should be considered on a case-by-case basis, taking into account the requirements in the relevant jurisdiction(s). Generally, however, investors into data centers may need to consider the following tax issues.

INCOME TAX:

a. Permanent establishment: If the data center is owned by an entity that is not a tax resident in the jurisdiction where the data center is located, the investor may face a permanent establishment (PE) risk in the jurisdiction the data center is located. Where tax authorities deem a PE to exist, they will typically treat it as subject to taxation in that jurisdiction, mainly to corporate income taxes.

The PE risk can often be managed if the data center is owned by an entity that is tax resident in the jurisdiction where the data center is located; the local company enters into a hosting service agreement with the foreign entity and physical access of the foreign entity (services recipient) to the data center is not unlimited. Any intercompany services should also be remunerated on an arm's length basis.

This is a complex issue, and differences in national laws can lead to different interpretations with respect to PE risks. For instance, Germany deems a PE to exist by way of engaging in hosting service agreements. On the other hand, the United Kingdom has published guidance that confirms that a hosting service contract in these circumstances would not create a PE.

Many jurisdictions have processes for clarifying and confirming particular taxation arrangements and thus avoiding any potential tax disputes. Tax rulings are binding to the tax authorities and can provide certainty for the taxpayers. For example, Canada and Denmark have confirmed in tax rulings that these hosting agreements do not result in a PE for the recipient of the hosting service. The Netherlands will also provide tax rulings on this matter.

In contrast, the tax authorities in the US will ordinarily not issue rulings on whether a taxpayer has a PE in the US for income tax treaty purposes and whether income is attributable to a PE in the US.

b. Capital gains: The transfer of assets such as real property is taxed as capital gains in most jurisdictions. It is important to note that this often results in the recapture of any depreciation booked on the real property. The transfer of shares is also taxed as capital gains in many jurisdictions. A detailed tax analysis in each jurisdiction is important to compare the tax impacts of asset sale versus share sale.

c. Other income tax issues: Other income tax issues may arise for the investor in some jurisdictions.

For instance, in the US, if a non-US entity is a passive foreign investment company (PFIC), the PFIC rules may recharacterize capital gains from such entity as ordinary income and also impose an interest charge for US investors. In addition, if a non-US entity is a controlled foreign corporation (CFC), the CFC rules potentially require current inclusion in income by a US investor of certain income earned by the non-US entity, regardless of any distributions by the non-US entity. Moreover, income from the operation of data centers (regardless of whether such data centers are located within or outside of the US) may be treated as "unrelated business taxable income" that is taxable to US pension plan investors and other US tax-exempt investors.

In the case of data centers located in the US and held directly by non-US investors, or held indirectly by such investors through a flow-through entity (e.g., a partnership), such investors may be treated as engaged in a US trade or business and thus subject to US income tax payment exposure and US income tax return filing requirements. In addition, if data centers are owned by US corporations, dividend distributions by such US corporations to non-US investors are subject to a 30% US withholding tax rate, which may be able to be reduced by an applicable income tax treaty. Dividend distributions are also subject to a 30% US withholding tax rate under the Foreign Account Tax Compliance Act (FATCA) rules, unless a non-US investor complies with the due diligence, registration and/or reporting requirements of FATCA. However, there is no "double withholding" with respect to dividends under the FATCA rules and the regular withholding rules.

In Brazil, the characterization of data center activities as a lease of equipment, data processing or service provision has generated legal uncertainty and disputes between taxpayers and tax authorities. For instance, there are controversies on the application of a more favorable regime (Presumed Profit Regime) for calculating the corporate income taxes due by data centers. The issue



is focused on the presumed profit margin to be used by the data centers opting for the Presumed Profit Regime: Is the general profit margin established by the legislation applicable to industries in general (8% for corporate income tax (IRPJ) and 12% for social contribution on net profits (CSLL)), or the profit margin determined by law applicable to the provision of services (32% to IRPJ and CSLL)? Other issues that need to be considered in Brazil, by way of example, relate to the following:

- the potential levy of the municipal services tax (ISS) on the data center activities in Brazil (i.e., the question on whether there is a provision of services to which the ISS applies)
- the applicable rates for the welfare contributions (PIS and COFINS) levied over the revenues of data centers in Brazil that are subject to the actual profit method
- the concept of Infrastructure as a Service (IAAS), which affects the taxation of the remittances outside Brazil in consideration for the infrastructure provided by data centers located overseas. The controversy in the case of IAAS is focused on the characterization of these remittances as lease or as an importation of services. If the treatment is of services, which has been the opinion of the tax authorities, the taxation is much higher.

Finally, in Peru, by way of further example, income characterization may occur (rental versus services) if the equipment acquired is owned not by the data center operator but by a related party. In addition, there are specific depreciation rules to be observed in case of equipment being acquired outside Peru and imported to the country.

REAL ESTATE TRANSFER TAX

The transfer of real property will likely result in a liability for real estate transfer tax for either the seller or the buyer, or both, depending on the jurisdiction. The transfer of shares in a real estate-rich company may be subject to real estate transfer tax in certain jurisdictions.

VALUE ADDED TAX

VAT may also levy on the transfer of assets/real property in certain jurisdictions. Furthermore, if the company is leasing servers to third parties, it would need to be reviewed whether this transaction is subject to VAT. This is often a factual analysis that needs to be reviewed on a case-by-case basis.

GENERAL ANTI-ABUSE RULES AND "SUBSTANCE OVER FORM" PRINCIPLES

In many jurisdictions there are rules, reporting obligations and related powers of tax authorities in relation to transactions or arrangements that do not have any commercial substance and the only purpose of which is achieving the tax benefit. These will need to be carefully considered to determine the tax structure of the investment.

POTENTIAL TAX BENEFITS

Countries across the world have adopted policies to create tax incentives to make investments in data centers even more attractive. Different tax benefits may also be available in certain jurisdictions at federal, state and/or municipal levels. In this sense, it is important to conduct a detailed analysis of the local tax incentives before implementing any transaction.

For instance, Argentina provides tax benefits to business activities related to software, computer and digital services, and services related to electronics and communications, among others. The tax benefits include income tax reductions, withholding tax exemptions, and credits related to labor contributions. Other related tax incentives related, for example, to the Gross Receipt Tax may apply at the municipal level.

In the US, sovereign wealth investors (non-US investors) are generally subject to 0% withholding tax on US dividends, interest and gains. Such investors will generally wish to invest in data centers so that: (i) they will not have US income tax payment exposure and US income tax return filing exposure; and (ii) they will be able to take advantage of the 0% US withholding tax rate on qualifying US income (e.g., US dividends).

Other tax incentives such as those related to the use of electricity and acquisition of equipment have been introduced in France, Sweden and the US. In the US, many states are competing for data center investment using tax incentives.



05 M&A Considerations

Data center transactions and investments, particularly joint venture or consortium arrangements that are focused on hyperscale data centers, can be complex and consideration should be given to the following matters:

- a. Development risk:** If the transaction involves greenfield sites, investors should consider whether, and to what extent, they are willing to accept development risk. Given the pace at which the market is moving, investors currently seem to be more willing to take development risk on data center transactions than is generally seen on typical infrastructure transactions.
- b. Ownership structure:** Investors will need to be diligent regarding the ownership structure to ensure it conforms to their requirements. While each investor will have its own set of internal requirements, key considerations may include: (i) ensuring tax efficiency during each of the development, operational and exit phases; (ii) avoiding unnecessary regulation; and (iii) the impact of any construction-related capex and/or debt on the investor's balance sheet, and whether it is possible or desirable to structure the investment in a way that avoids such consolidation.
- c. Customer relationships:** Where investors are not investing directly in the data center operator itself, they should carefully consider the relevant operator's relationship with its end-customers and whether the data center assets are focused on the retail, wholesale or hyperscale markets. While it is important to conduct due diligence on the customer contracts that relate to the particular investment, data center operators may have relationships with their customers that extend beyond a particular investor's investment (i.e., outside of the transaction parameter). As a result, investors should look to gain an understanding of how the operator interacts with its customers generally, as the investor and the operator may not be fully aligned. For example, although an investor is likely to act in a predominantly economic manner in relation to its investment, an operator is more likely to consider the broader implications that an action may have on its customers and may be willing to forego economic benefits to preserve or enhance its reputation as an operator.

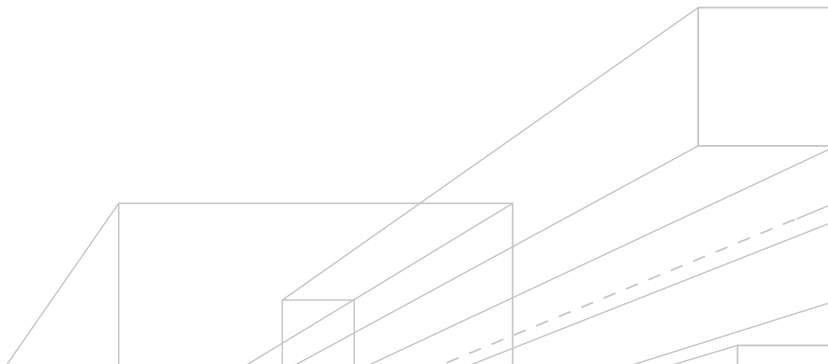
- d. Exit:** Exit rights will be a key consideration for investors, who will need to ensure there are appropriate avenues to achieve liquidity. These liquidity events should be reflected in the contractual arrangements. Investors should also ensure that they adequately understand any arrangements with the operator that may survive the exit or impact the various exit scenarios.

06 Financing issues

Data centres present some unique features and risks for debt financiers compared with other asset classes. Whilst they share many characteristics with traditional real estate financing, there are important differences, and financing approaches applicable to long-term 'core' infrastructure assets have increasingly been adapted to apply to data centres and other 'core plus' infrastructure. Some data centre business models also lend themselves to leveraged finance-style funding packages, with significant growth capex / expansion flexibility, and relatively high leverage supported by forward-looking EBITDA projections (often with detailed accounting adjustments) based on an expanding book of customer contracts.

However, investors should be wary of seeking to categorise data centre financing solely within a single financing paradigm (whether it be real estate finance, infrastructure / project finance or leveraged finance). Strict adherence to a particular financing approach may encounter obstacles with some of the unique features of data centres, so it is important that financiers have the flexibility to embrace certain features of alternative financing paradigms where appropriate for the particular business and credit profile.

For example, a traditional project finance-style approach to tripartite arrangements for key customer contracts will often be inappropriate, given factors such as the differing tenors, and the relatively high value of customer installed equipment as compared to the customer's rights to use the facility itself (which can often mean tripartite protections are as much for the protection of the customer as for the financier). Similarly, a project financing approach may be less flexible in banking assets where material cost lines are not fully contracted over the loan life, or where expansion capacity is relatively unconstrained.





On the other hand, a project finance approach can be more appropriate than a leveraged finance model when it comes to assessing contractual risks relating to performance and abatement (as well as more general technology risk and obsolescence issues). The increasing use of corporate PPAs to meet the significant energy needs of data centres adds another layer of complexity to financier diligence on key contracts (as compared to 'standard' energy supply agreements), both by virtue of the complexity of corporate PPA structures themselves, and in the context of financier policies on ESG issues. These operational complexities, together with other issues which are critical in the data centre sector such as security (both physical and data), will also benefit from specialist expertise.

The ability to bring together differing approaches on the sector-specific issues which data centres present to financiers will be important as the financing structures applying to data centres continue to evolve. This is particularly the case in financing markets where data centres are still an early-stage emerging asset class, but even in more developed markets with longer track records and specialist data centre financing expertise, innovations in underlying structures, technologies and business models will continue to drive new financing solutions.

07 Sustainability Considerations

Data centers use copious amounts of energy that must be available with no interruption, and most data center operators make provisions for back-up generation (usually standalone diesel units on site). Many direct investors in data center businesses (particularly private capital-like pension funds and infrastructure funds) are looking to "green" data centers — data centers that operate at maximum energy efficiency and minimum environmental impact, with renewable energy offsets. Procurement of renewable energy offsets through corporate PPAs is growing to meet sustainability needs, but it should be recognized that this typically refers to synthetic contracts. In contrast, in most cases it is not technically practical to physically operate a data center with renewable power given the requirement for 100% uninterruptible power. Most corporate PPAs are with customers directly seeking to offset their physical use of thermal energy taken from the grid with renewable energy production.

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